Channel 132
number

displayed
video 131

TV Receiver
13

IR remote 123

IR receiver
124

Controller
125

Video overlay gen
122

Tuner
121

modulator
126

User interface unit
12

Multitap or antenna
11

Television Distribution Network
10

FIG. 1 System for Selecting
Channels for display
Television channels for display
on a Television Receiver

(Premium Cable)

DIS
.
.
.

11:00AM 7-15-97

2   I Love Lucy
3   Sesame St.
.
.
.
20   Dr. Quinn

.
.
.

61 Honeymooners
(Basic Cable)
AMC
.
.
.

program guide
20

displayed
portion of
program guide
21
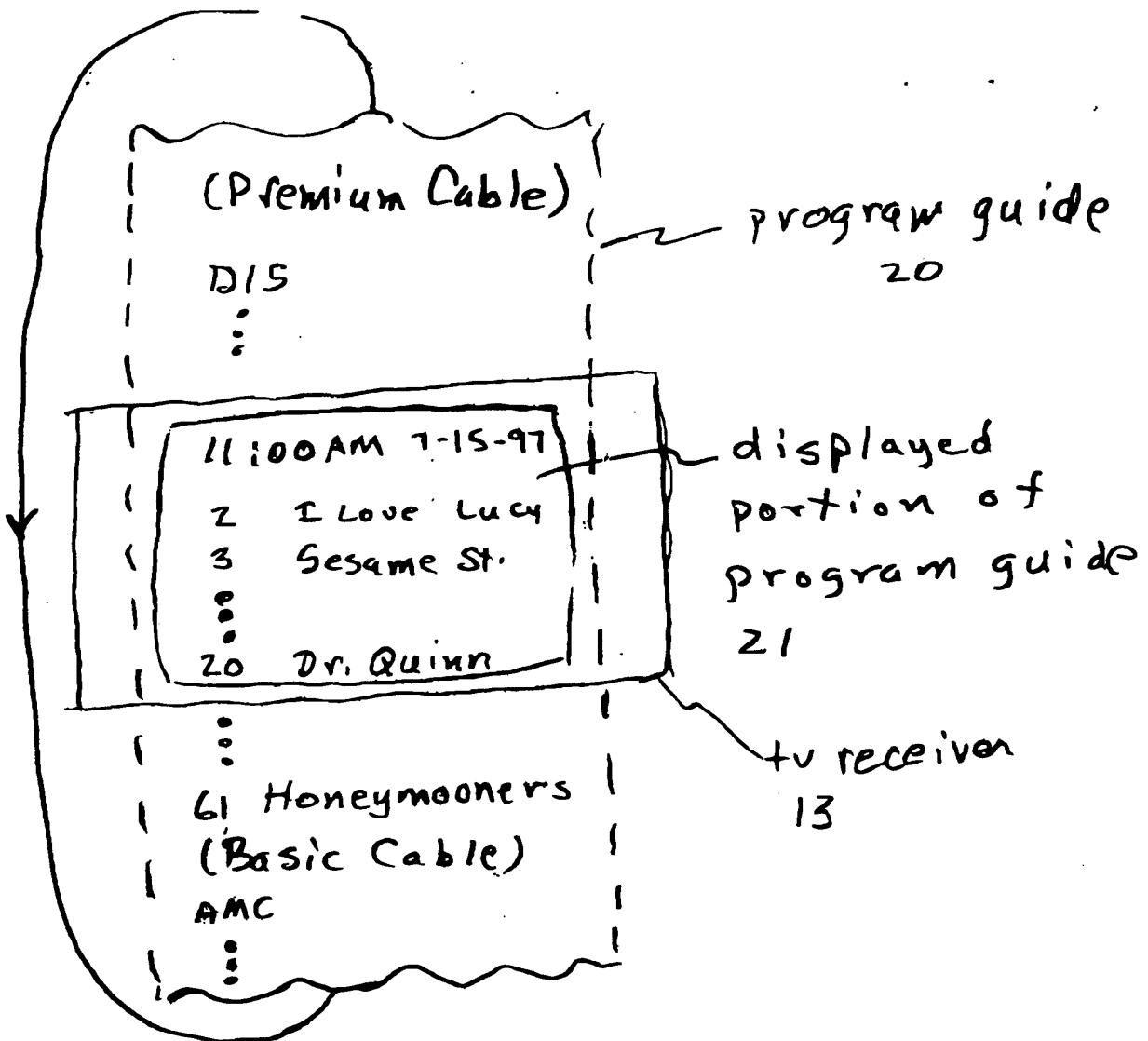
tv receiver
13

FIG. 2 Program Guide Channel
(Prior Art)

IR remote 35
351 PG/TV
36 IR receiver
numeric key pad 352
353 38
SEL 357 365 354

34
Data Processor
clock 39

Memory
33

32
data decoder

from television distribution network 10

tuner
31

30

Video display gen
37

Modulator
38

to television receiver
13
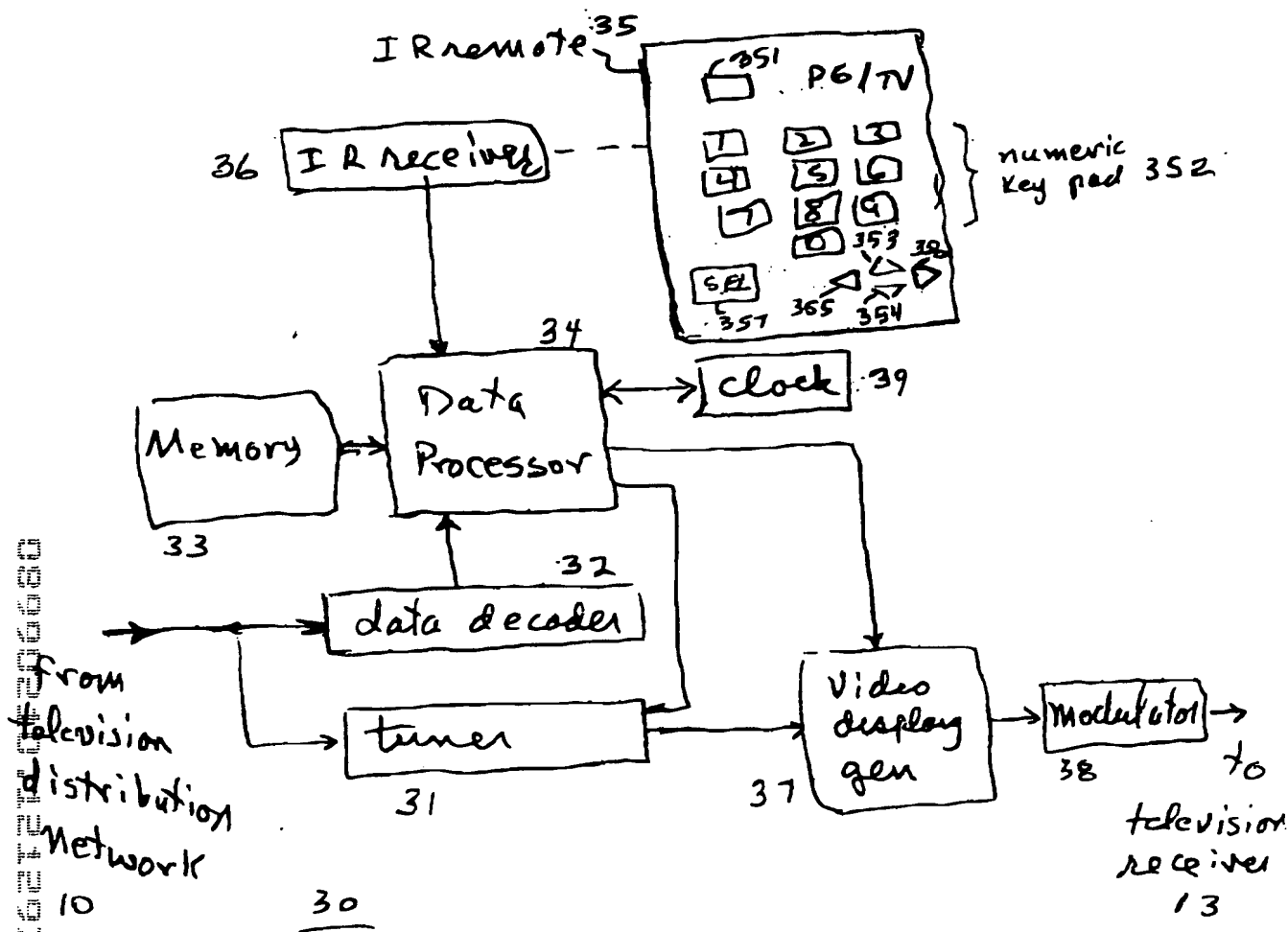
FIG. 3 User-Interface unit for an Interactive Electronic Program Guide, System (Prior Art)

partial
program
guide
41

#2 Cpg (blinking)

	11:00 AM	11:30 AM	12:00 PM	
2	I love Lucy	All My Family	News	
3	Sesame St.		News	
4				

43 Selected program
(underlined)

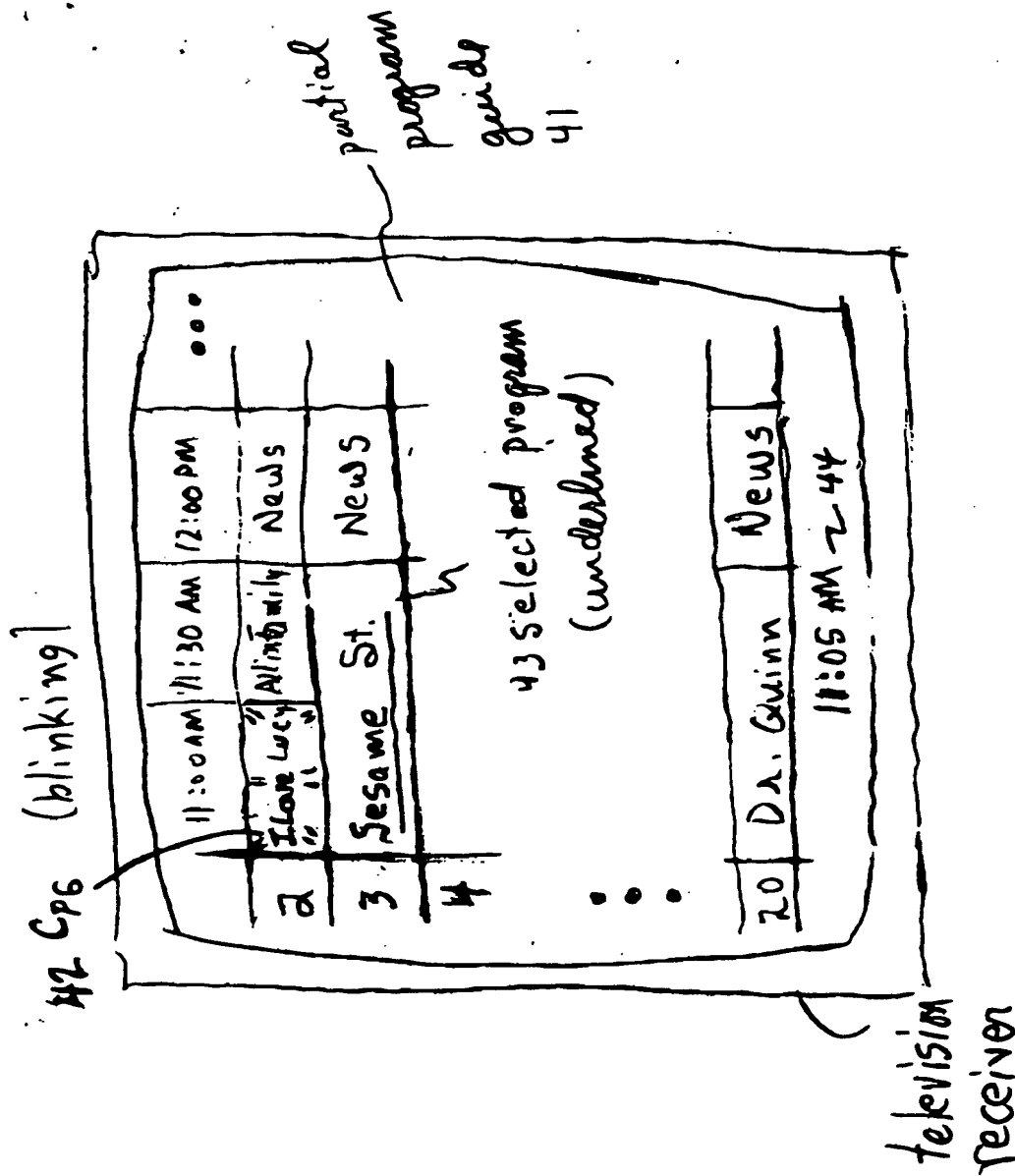| 20	Dr. Quinn	News	
	11:05 AM ~ 44		

television
receiver
13

FIG. 4 Program Guide Displayed
on a Television Receiver

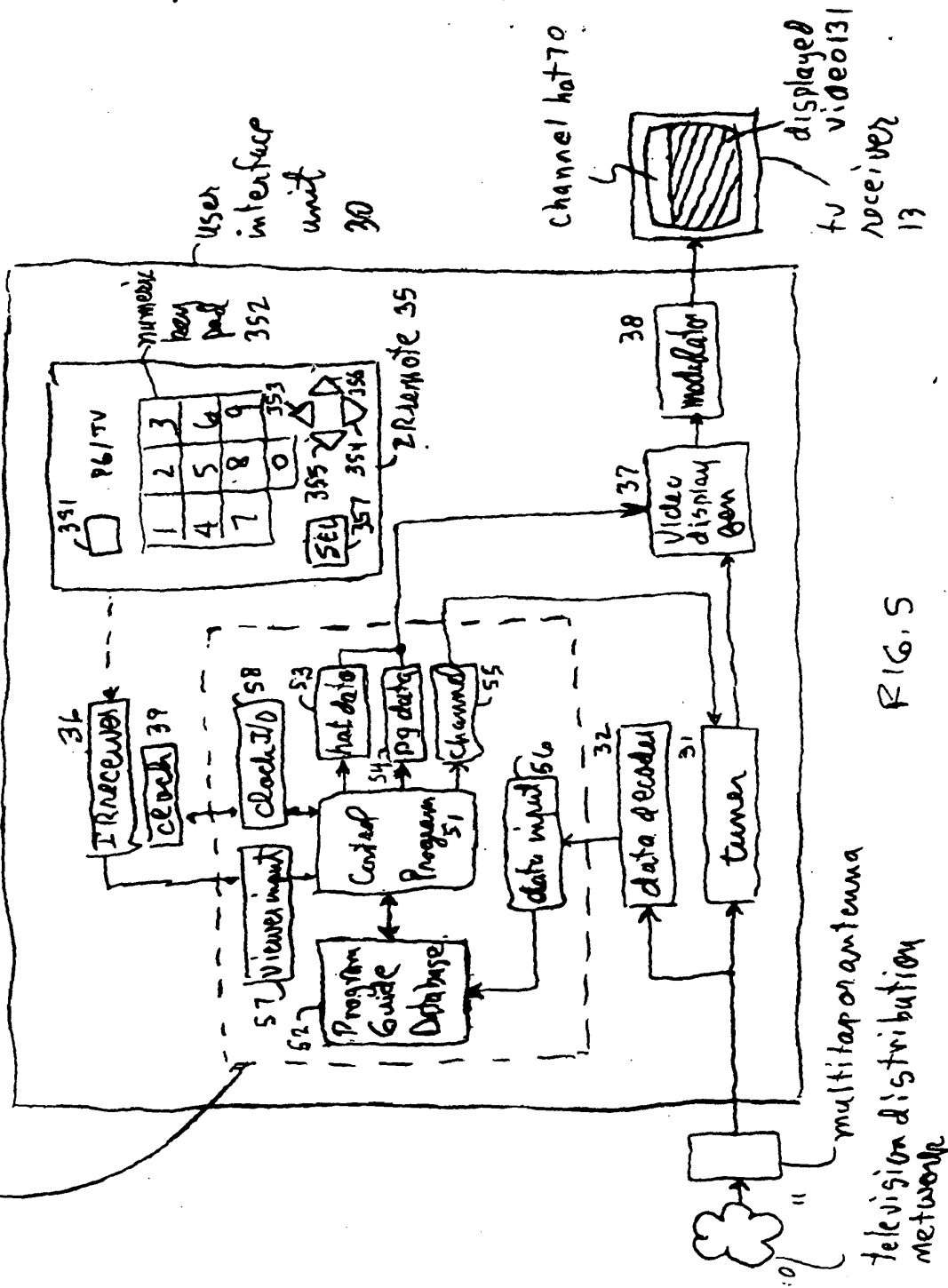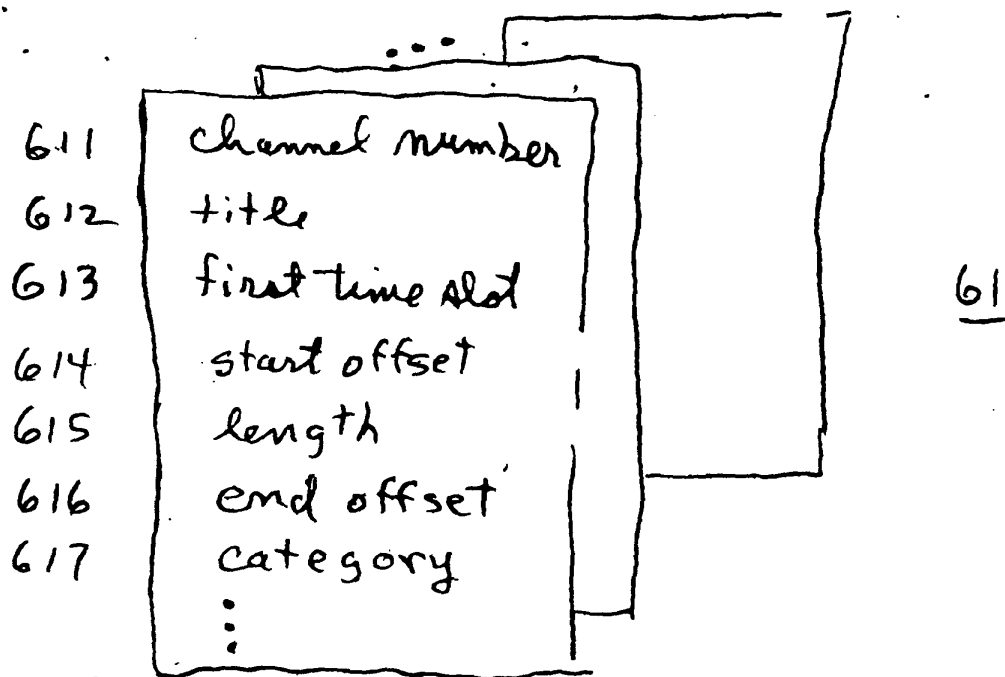50 Interactive Electronic Program Guide System with Sideways Surfing Capability

user interface unit 30

numeric key pad 352

PC/TV

1	2	3
4	5	6
7	8	9
	0	

351

353

SEL 355 354 356

357

2 Remote 35

36
IR receiver

Clock 39

Clock I/D 58

that data 54

Pg data

Channel 55

Control Program 51

57 viewer input

data input 66

data decoder

61

tuner

Program Guide Database

62

37

Video display Gen

38

modulator

channel hat 70

displayed video 131

tv receiver 13

FIG. 5

multitap or antenna

television distribution network

611	channel number
612	title
613	first time slot
614	start offset
615	length
616	end offset
617	category

FIG. 6A   Program - Guide Database

63	SLE	Surf left enable
64	SLN	Surf left channel no.
65	SRE	Surf right enable
66	SRN	Surf right channel no.
67	NCN	Next category channel no.
68	PCN	Previous Category Channel no.

FIG. 6C   Variables Maintained by
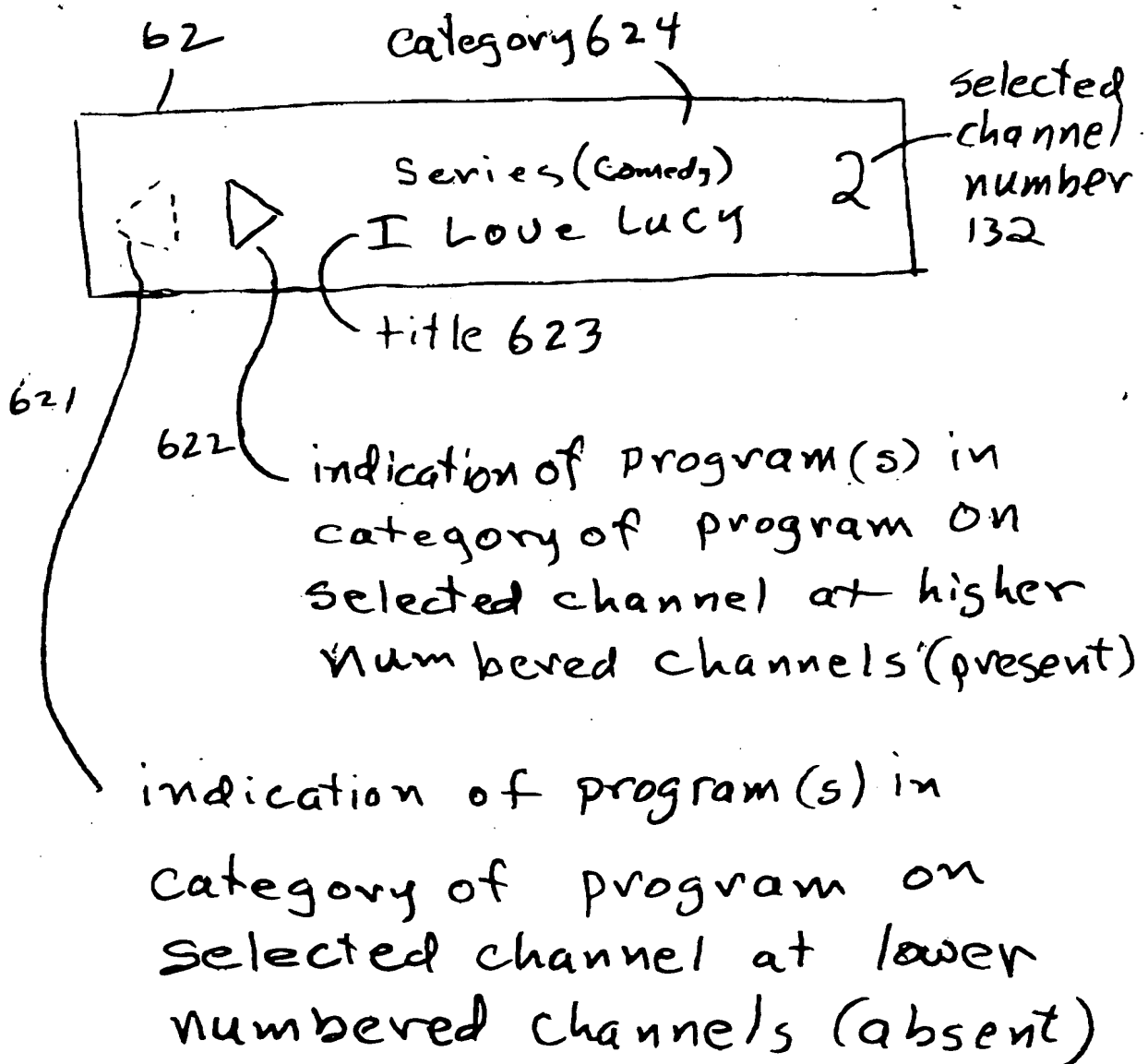Electronic Program Guide to
Support Sideways Surfing

62

Category 624

selected
channel
number
132

Series (Comedy)
I Love Lucy

2

title 623

621

622

indication of program(s) in
category of program on
selected channel at higher
numbered channels (present)

indication of program(s) in
category of program on
selected channel at lower
numbered channels (absent)

FIG. 6B Channel Hat

701 read clock

702 time slot selected ? — yes → 703 read channel from S.S → 704 unselect program on S.S

no

705 viewer input ? — no →

yes

706 P6/TV key ? — yes → 707 toggle P6/TV mode →

no

708 P6 mode ? — yes → 709 update S.S →

no

710 surf (algorithm 80)

711 update next (algorithm 90)

712 send channel

700

FIG. 7

80

viewer entered
a Command in
TV mode

801 — read clock

yes

803 — inc channel

804
find all records
matching channel & time

805
no records ?

yes

no

802 up arrow ?

no

806 down arrow ?

yes

807 — dec channel

808
find all records
matching channel & time

809
no records ?

yes

no

no

810 left arrow ?

yes

811
channel = SLN

no

812 right arrow ?

yes

813
channel = SRN

no

814 sel key ?

yes

815
channel = CCN

820
inc channel no

yes

819
no record ?

no

no

816 — accept additional input

817 non numeric key ?

yes

818
find all records at channel & time
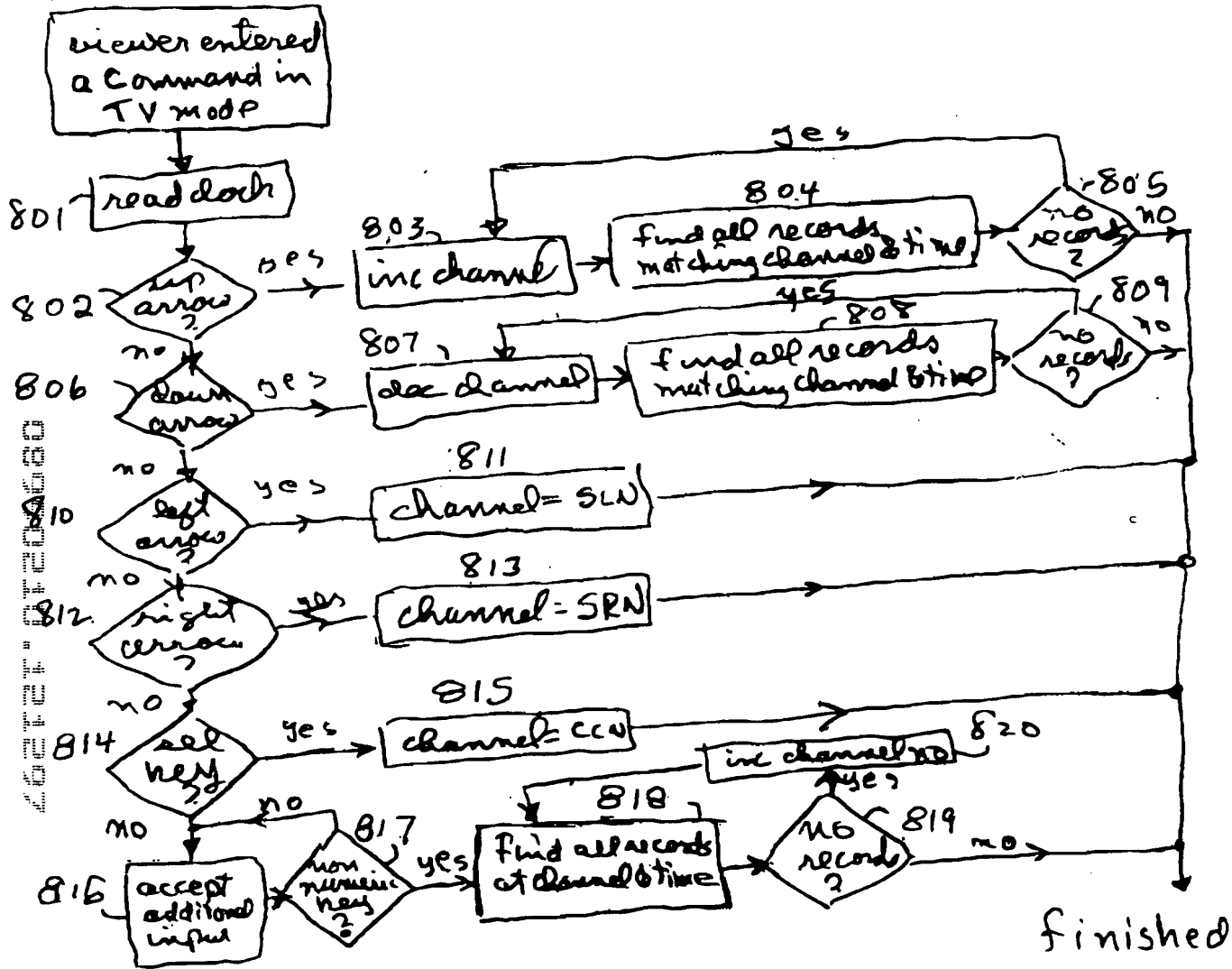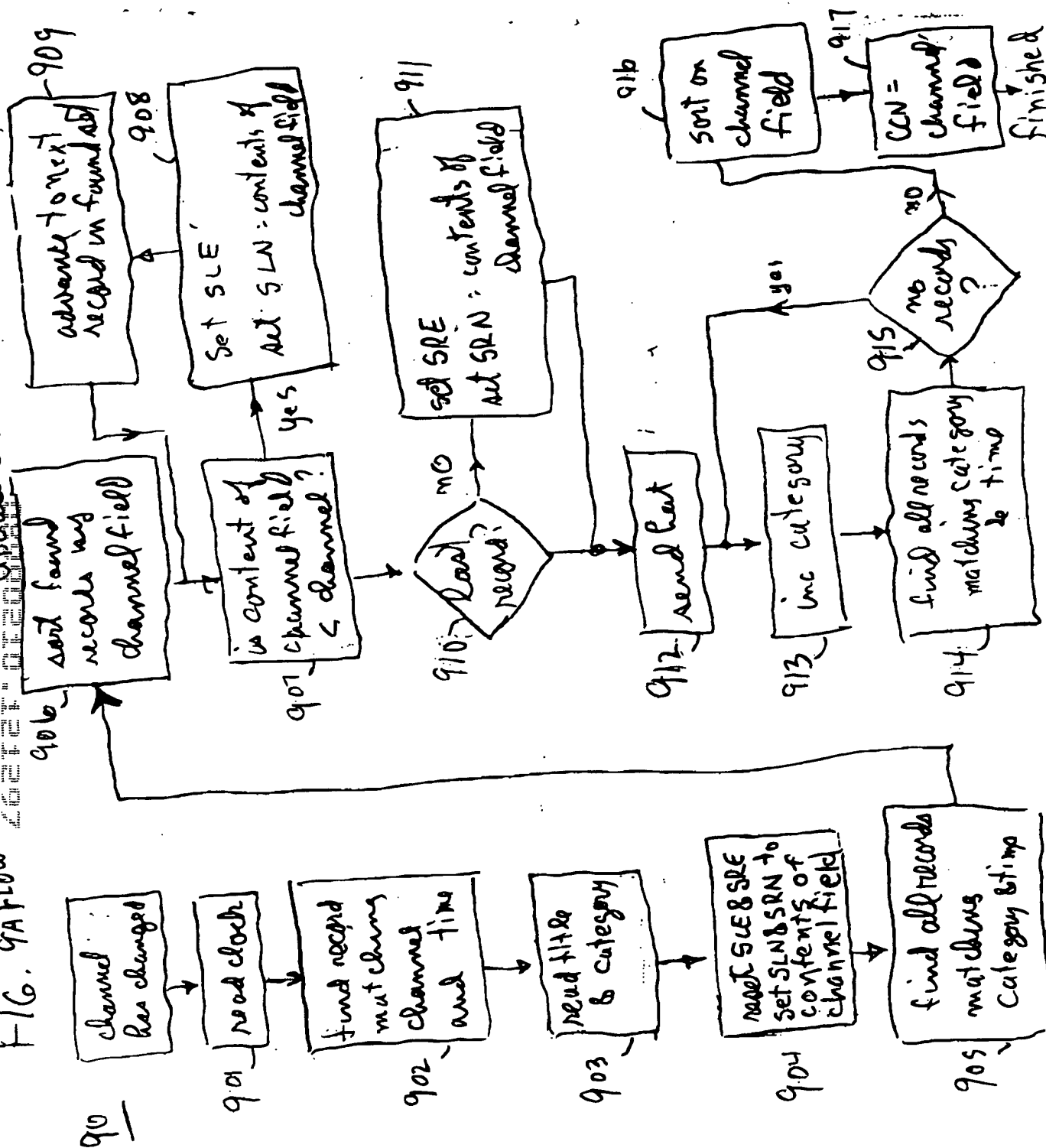
no

finished

FIG. 8   Flow Chart of Algorithm
Used in Selecting Channels
and Surfing in TV mode.

FIG. 9A Flow Chart of Algorithm Used to Update the "Channel Has" and ... category

901 — channel has changed

901a — read clock

902 — find record matching channel and time

903 — read title & category

904 — set SLE & SRE, set SLN & SRN to contents of channel field

905 — find all records matching category & time

906 — sort found records using channel field

907 — is content of channel field < channel? → yes → 908; → no → 910

908 — set SLE' at SLN : contents of channel field

909 — advance to next record in found list

910 — last record? → no

911 — set SRE at SRN : contents of channel field

912 — read next

913 — inc category

914 — find all records matching category & time

915 — no records? → yes → 916; → no → 912

916 — sort on channel field

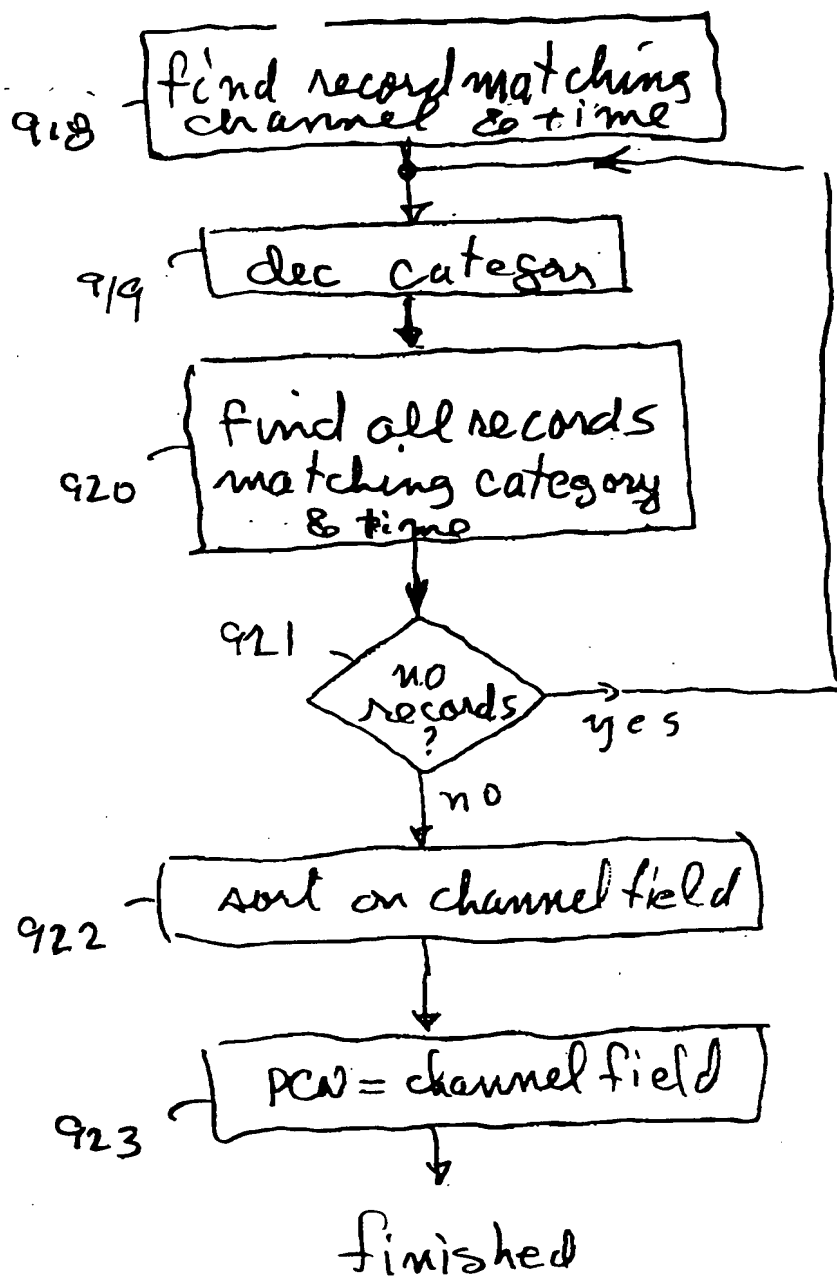917 — CCN = channel field   finished

FIG. 9B Steps Added to Algorithm 90
to Prepare for Surfing to a
Channel Carrying a Program in the
Previous Category